



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,650	11/24/2003	Lynne C. Eigler	BA1-03-1495 (03-1495)	1756
7590	09/09/2004		EXAMINER VERBITSKY, GAIL KAPLAN	
Robert R. Richardson PO BOX 2677 Silverdale, WA 98383-2677			ART UNIT 2859	PAPER NUMBER

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/720,650

Applicant(s)

EIGLER ET AL.

Examiner

Gail Verbitsky

Art Unit

2859

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 4, 14, 31-32, 37-38, 42-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Domen (U.S. 3665762).

Domen discloses in figs. 1-5 a calorimeter 10 comprising a body (core) 12 of a given heat capacity for absorbing radiation energy from a sample (radiation beam), a first temperature sensor (thermistor/ resistance wire) 22 imbedded into said body, a second temperature sensing means (thermistor) 24 to sense temperature of a jacket, a calibrating element (heating resistor/ thermistor/ first electrical heater) 26 imbedded in the body 12, while the thermistor 24 can act as a temperature sensor and a second heater for the jacket (col. 2, lines 69-71). The device can comprise a thermally regulated medium (heat sink/ cooling medium) surrounding the device.

For claim 42: Domen calibrates for the thermal (heat) capacity of the body, as shown in col. 7. The calibration mode includes heating (cooling) the body to a predetermined temperature wherein a final value of the temperature for heating is an initial value of the temperature for cooling (col. 7, lines 16-25).

For claim 37: by the definition of the thermistor, the resistance of the thermistor is correlated to the temperature measured by the thermistor,

For claim 38: as the temperature of the body rises as the result of an external source of energy (radiation beam), the temperature of the thermistor 22 changes (col. 3, lines 20-25) and detected by a Wheatstone bridge (detector).

The method steps will be met during the normal operation of the device stated above.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 9 are rejected under 35 U.S.C. 102(e) as being anticipated by over Argenti (U.S. 20030099276).

Argenti discloses in Fig. 1 a device for measuring a power (calorimeter) of a laser beam, the device comprising an absorbing body (mass) 2 of a known heat capacity, a first temperature sensor (thermocouple) 10 and a second temperature sensor (thermocouple) 11 connected to a microprocessor which manages both power acquisition and power calculation algorithm and display a signal indicative of the power. This would imply, that the microprocessor comprises all the components (first, second, etc.) necessary for converting measured temperature indicative signal into a temperature and converting the temperature into the power (in watts) of the laser beam.

Art Unit: 2859

Please note, that it is known that **Watt= Joule/ time**, therefore, it is inherent that, in order to indicate power in watts, the microprocessor should divide energy by time.

Argenti teaches (paragraph [0039]) to cool the device, in a broad sense, suggesting a cooling system to cool the body from the temperature elevated.

6. Claims 1-2, 4-5 are rejected under 35 U.S.C. 102(e) as being unpatentable over Refalo et al. (U.S. 6572263) [hereinafter Refalo].

Refalo discloses a calorimeter comprising a heat absorbing sample/ body, a heat removal (non-aqueous heat sink/ cooling) rod 16, a heater for heating a sample, a temperature sensor 51 in thermal communication with the sample/ body, first and second temperature sensors (thermistors) 38 and 40 spatially located on said rod to sense the temperature of said rod to determine an equilibrium temperature (col. 6, lines 14-17). Refalo also discloses a digital multimeter and a computer, inherently, having components (first and second respectively) converting the detected resistance of the temperature sensors into the temperature of the body and then into a power corresponding to the power absorbed and thus, to the power added (removed) from the body.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2859

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Domen.

Domen discloses the device as stated above in paragraph 2.

Domen does not teach that the wire includes enamel coated cooper wire, as stated in claim 3.

With respect to claim 3: the use of the particular material, i.e., enamel coated cooper wire, as stated in claim 3, for the temperature measuring resistance, absent any criticality, is only considered to be the "optimum" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the temperature measuring resistance, disclosed by Domen, since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Domen in view of Refalo et al. (U.S. 6572263) [hereinafter Refalo].

Domen discloses the device as stated above in paragraph 2.

Domen does not explicitly teach a multimeter.

Refalo discloses a device in the field of applicant's endeavor comprising a digital multimeter to acquire a temperature and a power data.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Domen, so as to have a

Art Unit: 2859

digital multimeter performing all the calculating functions, as taught by Refalo, so as to fast and accurately calculate the power, calibrate the device, and display data on the display, as well known in the art.

9. Claims 6-8, 15-18, 24-25, 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domen in view of Argenti (U.S. 20030099276).

Domen discloses the device as stated above 2.

Domen does not explicitly teach the limitations of claims 6-9, 15-18, 24-25, 38-39.

Argenti discloses in Fig. 1 a device for measuring a power (calorimeter) of a laser beam, the device comprising an absorbing body (mass) 2 of a known heat capacity, temperature sensors (thermocouples) 10 and 11 connected to a detector being a microprocessor (inherently, including a digital multimeter) which manages both power acquisition and power calculation algorithm and display a signal indicative of the power. This would imply, that the microprocessor comprises all the components (first, second, etc.) necessary for converting measured temperature indicative signal into a temperature and converting the temperature into the power (in watts) of the laser beam. Please note, that it is known that **Watt= Joule/ time**, therefore, it is inherent that, in order to indicate power in watts, the microprocessor should divide energy by time. Argenti teaches (paragraph [0039]) to cool the device, in a broad sense, suggesting a cooling system to cool the body from the temperature elevated.

For claim 18: temperature sensors are two (plurality) thermocouples 10 and 11.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Domen, so as to have a microprocessor performing all the controlling and calculating functions, as taught by Argenti, so as to fast and accurately calculate the power, calibrate the device, and display data on the display, as well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the thermistors in the device disclosed by Domen, with the thermocouples, as taught by Argenti, because both of them are alternate types of the temperature measuring elements which will perform the same function, of sensing the temperature of the body, if one is replaced with the other.

With respect to claim 24:

10. Claims 10-12, 26-29, 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domen in view of Vogel (U.S. 587611).

Domen discloses the device as stated above in paragraph 2.

Domen does not explicitly teach that the cooling device is non-aqueous system including a plurality of channels in thermal communication with the body and being connectable to a source of a gas, as stated in claims 10-12, 26-29, and 34-35.

Vogel discloses in Fig. 1 a device in the field of applicant's endeavor wherein, a cooling system comprises a plurality of channels 40, 48, etc. in thermal communication with a body (sample) 24 and connected to a source of a gas 62.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Domen, so as to have a cooling system comprising a plurality of gas containing channels, as taught by Vogel, because such a cooling system is very well known in the art.

With respect to claims 12: using a gas that includes a gaseous nitrogen as a coolant substance, as stated in claims 12, 29, or an inert gas, as stated in claim 28, absent any criticality, is only considered to be the “optimum” material/ substance that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the cooling system disclosed by Domen since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

11. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domen and Argenti as applied to claims in view of Vogel (U.S. 587611).

Domen and Argenti disclose the device as stated above in paragraph 9.

They do not explicitly teach that the cooling device is non-aqueous system including a plurality of channels in thermal communication with the body and being connectable to a source of a gas, as stated in claims 19-21.

Vogel discloses in Fig. 1 a device in the field of applicant's endeavor wherein, a cooling system comprises a plurality of channels 40, 48, etc. in thermal communication with a body (sample) 24 and connected to a source of a gas 62.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Domen and Argenti, so as to have a cooling system comprising a plurality of gas containing channels, as taught by Vogel, because such a cooling system is very well known in the art.

With respect to claim 21: using a gas that includes a gaseous nitrogen, as a coolant substance, as stated in claim 21, absent any criticality, is only considered to be the “optimum” material/ substance that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the cooling system disclosed by Domen and Argenti since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

12. Claims 13, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domen in view of Fricke (U.S. 3508056).

Domen discloses the device as stated above in paragraph 2.

Domen does not explicitly teach that the cooling device is a water (aqueous) coolant, as stated in claims 13, 36.

Fricke discloses in Fig. 1 a device in the field of applicant’s endeavor wherein; a heat sink 10 is a water (aqueous) coolant.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Domen, so as to have a

Art Unit: 2859

an aqueous cooling system, as taught by Fricke, because such a cooling system is very well known in the art.

13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Domen and Argenti, as applied to claims above and further in view of Fricke (U.S. 3508056).

Domen and Argenti disclose the device as stated above in paragraph 9.

They do not explicitly teach that the cooling device is a water (aqueous) coolant, as stated in claim 22.

Fricke discloses in Fig. 1 a device in the field of applicant's endeavor wherein; a heat sink 10 is a water (aqueous) coolant.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Domen and Argenti, so as to have a an aqueous cooling system, as taught by Fricke, because such a cooling system is very well known in the art.

14. Claims 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Domen in view of DiGiovanni et al. (U.S. 6513994) [hereinafter DiGiovanni].

Domen discloses the device as stated above in paragraph 2.

Domen does not explicitly teach the limitations of claims 40-41.

DiGiovanni teaches in Fig. 3 a device/ calorimeter having a heat absorbing (heat sensing) element 34 with a thermal resistance of a cooper wire R and thermocouples 36 attached at different points of the absorbing element 34 to detect a heat flow along a

Art Unit: 2859

portion of the element 34 (col. 3, lines 52-63). When, in the beginning, the device is calibrated, the calorimeter and a source of energy (fiber laser) are brought into equilibrium; the equilibrium is, inherently, sensed by the thermocouples detecting a steady state with no heat flow.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Domen, so as to add a plurality of thermocouples, as taught by DiGiovanni, along the body, so as to determine when the body is in equilibrium, in order to calibrate the device and thus, to improve accuracy of measurements.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication should be directed to the Examiner Verbitsky who can be reached at (571) 272-2253 Monday through Friday 8:00 to 4:00 ET.

GKV

Gail Verbitsky

Primary Patent Examiner, TC 2800



August 30, 2004